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MILK PROCESSOR SALES, COSTS, AND MARGINS

W. Webster Jones
Floyd A. Lasley

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17. Document Analysis a. Descriptors <table border="0"> <tr> <td>Containers</td> <td>Operating costs</td> <td>Selling costs</td> </tr> <tr> <td>Dairies</td> <td>Plants (industrial)</td> <td>Trends</td> </tr> <tr> <td>Distributing</td> <td>Processing</td> <td>Volume</td> </tr> <tr> <td>Expenses</td> <td>Sales</td> <td></td> </tr> </table> b. Identifiers/Open-Ended Terms <table border="0"> <tr> <td>Cottage cheese</td> <td>Net margin</td> </tr> <tr> <td>Cream</td> <td>Product mix</td> </tr> <tr> <td>Fluid milk</td> <td>Seasonal increases</td> </tr> <tr> <td>Gross margin</td> <td>Single plant</td> </tr> <tr> <td>Ice cream</td> <td>Size</td> </tr> </table> c. COSATI Field/Group 02-B, 05-C, and 06-II					Containers	Operating costs	Selling costs	Dairies	Plants (industrial)	Trends	Distributing	Processing	Volume	Expenses	Sales		Cottage cheese	Net margin	Cream	Product mix	Fluid milk	Seasonal increases	Gross margin	Single plant	Ice cream	Size
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PREFACE

The Economics, Statistics, and Cooperatives Service has collected quarterly cost and sales data for 30 fluid milk processor-distributors since 1972. Data for 1972-77 were analyzed and compared with 1952-64 data by Lasley, Jones, and Sitzman in Milk Dealers' Sales and Costs: A Trend Analysis, 1952-77, (ESCS-62). This report compares 1978 data with 1977's. Operating cost is disaggregated to show the cost of major elements associated with processing different volumes of milk. Trends in cost, size, and type of container are also presented.



MILK PROCESSOR SALES, COSTS, AND MARGINS

W. Webster Jones and Floyd A. Lasley

Agricultural Economists

INTRODUCTION

This report on 30 fluid milk plant operations focuses on current information on sales, cost of goods sold, gross and net margins, and operating costs. Detailed 1978 accounting information on these 30 milk processor-distributors are examined; the data are compared with 1977 and earlier years. A special study of container trends by cost, size, and type is also presented.

A private consulting service furnished quarterly data on the 30 plants considered to typify single-plant fluid milk processor-distributors throughout the United States. The specific plants comprising the 30-plant sample varied, although the consulting service attempted to replace plants removed from the sample with similar plants, and, at times, the changes appeared to significantly affect the data, especially shortrun comparisons. Data for 20 of the 30 firms did appear in all quarters of 1977 and 1978. Thus, for quarterly comparisons, we used the 20-firm data but, for yearly comparisons, we used data for all 30 firms. ^{1/} Costs and sales data are presented on a per hundred-weight (cwt) of fluid volume processed basis.

Total fluid volume processed by the 30 plants in 1978 was 0.8 percent below 1977's volume. Volume processed per firm averaged 85.4 million pounds of which 95 percent was milk and cream. Milk and cream processed, which decreased about 1.0 million pounds per plant, more than offset the 0.3-million pound increase in nonfat dry milk, orangeade base, water, and other products.

SALES VALUE

The major source of sales receipts for the 30 plants was fluid milk products with minor amounts from ice cream, cottage cheese, sour cream, yogurt, orangeade, and other products. Net sales averaged \$21.58 per cwt of fluid volume processed in 1978 (table 1). This increase of \$1.75 over 1977 can be attributed to higher selling prices and changes in the product mix.

Receipts for the 20 plants were higher in all quarters of 1978, compared with a year earlier (table 2). Seasonal increases in ice cream sales boosted sales receipts during the second and third quarters. Higher selling prices, especially during the fourth quarter, also increased receipts.

^{1/} Quarterly data for the 30 plants are presented in appendix tables 1 and 2.

RAW MATERIALS AND OTHER PRODUCT COSTS

Raw materials and other products cost the 30 plants \$14.04 per cwt in 1978. This was \$1.05 (8.1 percent) more than in 1977 (table 1), and was the largest yearly increase since 1974, when a \$2.54 increase occurred. The 1978 cost increase of \$1.05 included 53 cents for milk and cream (mostly milk), 29 cents for finished products purchased for resale, and 23 cents for other (which includes ingredients for making ice cream, orangeade, and other products). Raw milk purchased for processing accounted for \$10.68 or 76.1 percent of the total cost, down 2.0 percentage points from the 78.1 percent of 1977.

Plant purchases of finished products, which have steadily increased, rose 1 percentage point in importance in 1978 and now comprise 15.9 percent of total raw materials and other product costs. Purchases of other ingredients also kept gaining and, because of a 25.6-percent increase in cost per cwt in 1978, rose to 8.0 percent.

Total costs for raw materials and other products for the 20 plants increased throughout 1978, reaching \$14.87 in the fourth quarter (table 2). Quarterly costs were above the respective quarters in 1977, with differences increasing from 62 cents in the first quarter to \$1.29 in the fourth quarter. Much of the 1978 cost increase occurred in the second and last quarters when milk and cream costs increased 47 cents and 60 cents, respectively.

The 30 processor-distributors spent 65.1 cents of each sales dollar for raw materials and other products in 1978 (app. table 2). This was 0.4 cents less than in 1977, as sales receipts increased more than the cost of materials purchased. Raw materials cost per dollar of sales for the 20 plants were higher in all quarters of 1978, compared with a year earlier, with cost increases being greater in the first and fourth quarters (table 3).

GROSS MARGINS

Gross margin represents net sales receipts minus payment for raw materials and other products. This margin (money), used to pay for procurement, processing, administration, and distribution costs, increased 70 cents per cwt in 1978 to \$7.54, after declining by 16 cents in 1977 (table 1). This was the result of the sales value increasing two-thirds more than the cost of materials.

OPERATING COSTS

Operating costs for the 30 plants in 1978 were \$6.89 per cwt, up 42 cents from 1977 (table 1). Labor and containers, usually the major elements of operating costs, comprised 81 percent (34 cents) of the increase. Labor costs increased 28 cents to \$3.25 and container costs rose 6 cents to \$1.35, the greatest increase since 1975 when labor costs rose 34 cents and container costs rose 26 cents. ^{2/}

Rent, depreciation, repairs, taxes, and insurance are costs associated with plant facilities. These costs totaled \$1.08 cwt in 1978, 1 cent over 1977. Rent, depreciation, and repairs, which represented nearly 82 percent of facilities' costs, were about 1 cent lower in 1978. Taxes and insurance increased 2 cents per cwt.

^{2/} Containers are emphasized in a later section of this report. Labor will be given special attention in a subsequent publication.

Operating supplies, energy, purchased services, general expenses, and advertising are other cost categories included under operating costs. These costs totaled \$1.23 per cwt in 1978, 9 cents more than in 1977. Cost category increases in 1978 relative to 1977 were: operating supplies, up 2 cents; energy, 3 cents; services purchased, 3 cents; and general expenses, 1 cent. Advertising expenditures remained the same.

A comparison of operating costs by plant size groupings based on fluid volume processed (table 4) did not show any clear relationship to size of plant for either 1977 or 1978. Further analyses are needed to identify the other factors affecting operating cost differences, but some likely causes are technology, products produced, functions performed in the marketing process, and management.

NET MARGINS

Net margin, which represents the income left after all expenses other than income taxes have been paid, in 1978 was 65 cents per cwt for the 30 plants, three-fourths more than the relatively low 37 cents of 1977 (table 1). Net margin in the first quarter of 1978 for the 20 plants was 19 cents below the same quarter in 1977, but cost of goods and services then lagged behind net sales and during the rest of the year net margins averaged 14 cents above 1977 for these plants. Net margins during 1972-78 for the 30 plants were usually highest in the second and fourth quarters and lowest in the first. 3/

TRENDS IN CONTAINER COST, SIZE, AND TYPE

Spectacular price increases for packaging supplies have considerably elevated their importance in fluid milk processing. Packaging represented only 13 to 16 percent of milk processing costs during the fifties and sixties. But large price increases in 1974 and 1975 boosted this cost almost 57 percent and packaging costs peaked at 20.3 percent in 1975 (table 5).

The importance of packaging cost since then has dropped slightly each year, however, as other costs have grown faster. For example, in 1978 packaging costs rose 4.65 percent, but because of greater increases in other operating cost elements, packaging importance dropped slightly to 19.6 percent of operating costs.

Packaging materials maintained an 11.4-percent share of the estimated total marketing cost (farm to retail spread) of \$11.86 per cwt of milk sold by the 30 plants in 1978. The total marketing cost for milk sold by these plants in 1978 was about \$1.05 greater than in 1977, with packaging having a 4.2-percent smaller share of the total. Packaging materials account for about the same share of milk's marketing cost as it does for the total marketing bill for all farm foods (12 percent). 4/

Container cost to fluid milk plants is determined by the size and type of container used as well as the prices paid suppliers (table 6). Container cost per cwt of fluid volume processed is higher if products are sold in half-pints, pints, and quarts rather than in half-gallons, gallons, and multigallons.

3/ Floyd A. Lasley, W. Webster Jones, and Leah Sitzman. Milk Dealer Sales and Costs: A Trend Analysis, 1952-77, ESCS-62, U.S. Dept. Agr., Econ. Stat. Coop. Serv., July 1979.

4/ The marketing bill is the total charge for transporting, processing, and distributing domestic farm foods consumed in homes and away from home.

Costs also differ by container types. The initial cost of a half-gallon glass container is higher than for the same size paper or plastic container, but as glass can be used for several trips its cost per trip is less than the nonreturnable paper and plastic containers. However, paper or plastic containers, even though they cost more than glass, generally contribute to an efficient plant operation and lower overall operating costs by saving on labor, utilities, and storage space.

Nonreturnable containers also facilitate distribution, especially to widening marketing areas. Thus, shifts from quarts to half-gallons and gallons and from glass to paper and plastic have tended to reduce operating costs.

Historical data on milk sales by size and type of container prior to the early fifties is lacking. Consumers, before the glass bottle, furnished their own containers when buying milk. 5/ The first commercial sales of milk in glass bottles (mostly quarts) were made in New York City in 1878. Milk in glass bottles was being sold in most of the larger cities by 1900. Milk distributors in smaller cities were also quick to adopt this method. 6/

The first sales of milk in a paper container occurred in Los Angeles in 1906. The paper container, although light and nonreturnable, was not readily adopted or used extensively until the thirties. Besides being more expensive than glass, paper lacked strength, customers could not see the creamline or whether the milk was clean, and certain sanitary problems related to making the carton had to be overcome. 7/

Tables 7 through 11 show changes in size and container type since 1954. Container data published previously by USDA's Agricultural Marketing Service were included in the tables to fill the time gap left between 1962 and 1976 in the plant sample data. Data from the two sources are not strictly comparable due to differences in: (1) fluid products included; (2) time of year; and (3) percent of total milk sold for fluid use in the United States. Data from both sources show similar trends despite these differences.

The quart container which, in earlier years, accounted for the greater share of milk sales now accounts for less than 10 percent. The half-gallon passed the quart sometime in the late fifties. The gallon container, which has gained steadily, now accounts for 40 to 50 percent of all sales. The proportion of milk sold in multigallon containers (dispensers) and in less than quart-size containers has not changed significantly.

Paper containers now account for 60 to 65 percent of all fluid milk sold. Paper moved past glass containers sometime in the early fifties, its use peaking at nearly 80 percent around 1970. Increased use of plastic, especially the plastic gallon container, has cut into paper and glass sales, with glass now accounting for less than 3 percent of the market. Sales of milk in plastic containers were first reported in 1964. Plastic container sales, after a slow start, have increased rapidly and now account for about one-third of total sales. Sales in plastic bag-in-box and metal containers have not changed significantly since 1954.

5/ Horatio N. Parker. City Milk Supply, New York, N.Y.: McGraw-Hill Book Co., 1917.

6/ B. H. Hibbard, and H. E. Erdman, Marketing Wisconsin Milk, Wisc. Agr. Expt. Sta. Bull. 285, Dec., 1917.

7/ M. J. Prucha, "Sanitary Aspects of Paper Milk Containers," J. Milk Tech., Vol. 1, No. 2, Jan., 1938, pp. 4-9.

Table 2--Fluid volume processed and net sales, costs, and margins for 20 fluid milk processor-distributors, by quarter and annual, 1977 and 1978

Account	1977 quarters				1978 quarters				1977	1978
	First	Second	Third	Fourth	First	Second	Third	Fourth		
Million pounds per plant										
Fluid volume processed:										
Milk and cream	19.97	19.75	19.53	19.81	20.74	20.47	20.82	21.66	79.06	83.68
Other 1/	.82	1.09	1.31	.96	.88	1.33	1.36	1.13	4.18	4.69
Total 2/	20.79	20.84	20.84	20.77	21.62	21.79	22.18	22.78	83.24	88.37
Dollars per cwt volume processed										
Net sales receipts: 3/	19.94	20.54	20.85	20.90	20.49	21.54	22.37	22.39	20.56	21.71
Raw materials and other product costs:										
Milk and cream	10.11	10.04	10.24	10.42	10.43	10.28	10.75	11.39	10.20	10.72
Finished products	2.02	2.16	2.23	2.14	2.05	2.40	2.48	2.29	2.14	2.31
Other 4/	.77	.96	1.01	1.01	1.04	1.28	1.31	1.20	.94	1.21
Total 2/	12.90	13.15	13.48	13.58	13.52	13.95	14.55	14.87	13.28	14.23
Gross margin	7.04	7.39	7.37	7.33	6.97	7.58	7.82	7.52	7.28	7.48
Operating costs:										
Salaries, wages, and commissions 5/	3.08	3.15	3.19	3.21	3.17	3.29	3.33	3.24	3.16	3.26
Containers	1.32	1.38	1.36	1.37	1.32	1.37	1.38	1.35	1.36	1.36
Operating supplies	.46	.45	.47	.46	.46	.45	.46	.47	.46	.46
Repairs	.27	.31	.31	.28	.29	.29	.31	.30	.29	.29
Taxes	.10	.11	.11	.10	.11	.12	.11	.10	.11	.11
Insurance	.08	.08	.08	.09	.09	.09	.09	.08	.08	.09
Depreciation	.30	.34	.34	.35	.32	.34	.35	.34	.33	.34
Rental and royalty	.26	.25	.26	.27	.25	.27	.29	.29	.26	.27
Purchased services	.38	.39	.43	.42	.38	.36	.40	.37	.41	.38
Advertising	.12	.16	.13	.15	.15	.16	.16	.16	.14	.16
General	.21	.14	.14	.18	.17	.21	.17	.19	.17	.19
Total 2/	6.59	6.77	6.83	6.86	6.71	6.96	7.04	6.88	6.77	6.90
Net margin 6/	.45	.62	.54	.47	.26	.63	.78	.64	.51	.58

^{1/} Other includes water, nonfat dry milk, orangeade base, and other products. ^{2/} May not total due to rounding. ^{3/} Gross sales receipts less discounts, allowances, and damaged product returns. ^{4/} Ingredients other than milk and cream used to make cottage cheese, ice cream, orangeade, and other products. ^{5/} Includes such costs as State and Federal unemployment, Federal old age, worker's compensation, and pensions. ^{6/} Net returns to owners before income tax.

Table 3--Cost per dollar of net sales for 20 fluid milk processor-distributors, by quarters and annual, 1977 and 1978

Account	1977 quarters				1978 quarters				1977	1978
	First	Second	Third	Fourth	First	Second	Third	Fourth		
	Cents									
Raw materials and other product costs:										
Milk and cream	50.70	48.88	49.11	49.86	50.90	47.73	48.06	50.87	49.61	49.38
Finished products	10.13	10.52	10.70	10.24	10.00	11.14	11.09	10.23	10.41	10.64
Other 1/	3.86	4.67	4.84	4.83	5.08	5.94	5.86	5.36	4.57	5.57
Total 2/	64.69	64.02	64.65	64.98	65.98	64.76	65.04	66.41	64.59	65.55
Gross margin	35.31	35.98	35.35	35.07	34.02	35.19	34.96	33.59	35.41	34.45
Operating costs:										
Salaries, wages, and commissions 3/	15.45	15.34	15.30	15.36	15.47	15.27	14.89	14.47	15.37	15.02
Containers	6.62	6.72	6.52	6.56	6.44	6.36	6.17	6.03	6.61	6.26
Operating supplies	2.31	2.19	2.25	2.20	2.24	2.09	2.06	2.10	2.24	2.12
Repairs	1.35	1.51	1.49	1.34	1.42	1.35	1.39	1.34	1.41	1.34
Taxes	.50	.54	.53	.48	.54	.56	.49	.45	.54	.51
Insurance	.40	.39	.38	.43	.44	.42	.40	.36	.39	.41
Depreciation	1.50	1.66	1.63	1.67	1.56	1.58	1.56	1.52	1.61	1.57
Rental and royalty	1.30	1.22	1.25	1.29	1.22	1.25	1.30	1.30	1.26	1.24
Purchased services	1.91	1.90	2.06	2.01	1.85	1.67	1.79	1.65	1.99	1.75
Advertising	.60	.78	.62	.72	.73	.74	.72	.71	.68	.74
General	1.05	.68	.67	.86	.83	.97	.76	.85	.83	.88
Total 2/	33.05	32.96	32.76	32.82	32.75	32.31	31.47	30.73	32.93	31.78
Net margin 4/	2.26	3.02	2.59	2.25	1.27	2.92	3.49	2.86	2.48	2.67

1/ Ingredients other than milk and cream used to make cottage cheese, ice cream, orangeade, and other products.

2/ May not total due to rounding.

3/ Includes such costs as State and Federal unemployment, Federal old age, worker's compensation, and pensions.

4/ Net returns to owner before income tax.

Table 4--Plant operating costs per hundredweight of fluid volume processed by size-groups: Plants, plant size, total operating cost, and selected operating cost elements, 30 plants, 1977 and 1978

Item	Pounds processed per quarter by size-group					Total
	Less than 10 million	10 to 19 million	20 to 29 million	30 million and over		
					<u>Number</u>	
Plants:						
1977	7.75	9.50	7.50	5.26		30.00
1978	6.75	9.00	9.25	5.00		30.00
					<u>1,000 pounds</u>	
Volume per plant:						
1977	5,420	16,178	24,374	50,844		21,514
1978	6,410	15,884	24,648	45,196		21,340
					<u>Cents per cwt</u>	
Operating cost:						
Salaries, wages, and commissions--						
1977	3.06	2.82	3.27	2.83		2.97
1978	3.40	3.11	3.34	3.22		3.25
Containers--						
1977	1.19	1.18	1.43	1.27		1.29
1978	1.37	1.26	1.45	1.29		1.35
Other--						
1977	2.03	2.09	2.26	2.26		2.21
1978	2.22	2.19	2.30	2.37		2.30
Total:						
1977	6.29	6.09	6.97	6.36		6.47
1978	7.00	6.56	7.09	6.88		6.89

Table 5--Container cost as a percent of total plant cost and operating cost, 1952-61 and 1972-78 1/

Year	Plant costs			Percent container cost is of:	
	Total cost	Operating	Container	Total	Operating
	<u>2/</u>	cost <u>3/</u>	cost	cost	cost
	<u>Dollars per cwt</u>			<u>Percent</u>	
1952	10.76	4.09	0.60	5.6	14.7
1953	10.49	4.20	.62	5.9	14.8
1954	10.25	4.35	.65	6.3	14.9
1955	10.51	4.50	.70	6.7	15.6
1956	10.83	4.68	.72	6.6	15.4
1957	10.77	4.77	.71	6.6	14.9
1958	10.67	4.84	.70	6.6	14.5
1959	10.77	4.87	.69	6.4	14.2
1960	10.84	4.86	.66	6.1	13.6
1961	10.94	4.97	.67	6.1	13.5
1972	13.70	5.25	.81	5.9	15.4
1973	14.02	4.89	.81	5.8	16.6
1974	17.07	5.40	1.01	5.9	18.7
1975	18.81	6.27	1.27	6.8	20.3
1976	19.25	6.40	1.28	6.6	20.0
1977	19.46	6.47	1.29	6.6	19.9
1978	20.93	6.89	1.35	6.5	19.6

1/ Figures for 1952-61 are based on data for an average of 73 plants but figures for 1972-78 are based on 30 plants.

2/ Total cost includes both raw materials (milk, cream, and other) and operating cost.

3/ Operating cost includes labor, containers, and other costs involved in processing, selling, and distributing.

Table 6--Container cost per hundredweight of milk processed and selected factors affecting cost for selected time periods

Time period	Cost per cwt	Cost factor		
		Percent of milk sold in paper 1/	Number of containers per cwt 2/	Container price index 3/
	<u>Dollars</u>	<u>Percent</u>	<u>Number</u>	<u>1967=100</u>
First quarter:				
1954	0.66	53.5	51.0	--
1956	.71	58.4	50.6	--
1958	.70	60.2	46.0	--
1960	.66	59.2	42.6	--
1962	.72	62.7	43.4	--
1964	.70	61.9	43.2	--
1974	.84	--	--	130.5
1975	1.28	--	--	173.2
1976	1.26	64.9	44.8	179.0
1977	1.25	61.7	44.0	188.9
1978	1.29	60.6	42.6	203.3

-- = Not available.

1/ Based on sales of homogenized milk, 1954-64, and sales of all fluid items, 1976-78.

2/ Estimated on basis of percent of sales in different container sizes.

3/ Wholesale Price Index, Bur. Labor Stat., U.S. Dept. Labor.

Table 7--Percentage of fluid milk and cream sales by container type,
1954 and selected years through 1978 1/

Year	Bulk <u>2/</u>		Glass		Paper		Plastic	
	ESCS	FMO-	ESCS	FMO-	ESCS	FMO-	ESCS	FMO-
	<u>3/</u>	AMS	<u>3/</u>	AMS	<u>3/</u>	AMS	<u>3/</u>	AMS
	4/	4/	4/	4/	4/	4/	4/	4/
	<u>Percent</u>							
1954	2.6	--	43.9	--	53.5	--	0	--
1956	3.8	--	37.8	--	58.4	--	0	--
1958	5.0	--	34.8	--	60.2	--	0	--
1960	5.1	--	35.7	--	59.2	--	0	--
1962	6.1	--	31.2	--	62.7	--	0	--
1963	--	4.8	--	31.4	--	63.8	--	0
1964	4.7	5.4	33.4	30.3	61.9	64.2	0	.1
1965	--	5.7	--	28.1	--	65.2	--	1.0
1966	--	6.0	--	24.5	--	67.9	--	1.6
1967	--	6.0	--	19.9	--	71.3	--	2.8
1969	--	5.7	--	11.9	--	76.8	--	5.6
1971	--	4.4	--	6.6	--	78.4	--	10.7
1973	--	4.1	--	3.9	--	71.6	--	20.5
1975	--	3.5	--	2.4	--	67.2	--	26.9
1976	3.7	--	.1	--	63.3	--	32.9	--
1977	3.5	3.0	.1	1.3	60.8	57.7	35.6	38.0
1978	3.3	--	0	--	60.6	--	36.1	--

-- = Not estimated.

1/ Data from two sources are presented: The ESCS columns contain plant sample data and the FMO-AMS columns contain Federal milk order plant data. The data show similar trends despite differences in: (1) fluid milk items included, (2) time of year, (3) percent of industry product sales.

2/ Plastic bag-in-box and metal can.

3/ Data for 1954-56 and 1958-64 were reported in Milk Distributors' Sales and Costs, MDSC No. 24, U.S. Dept. Agr., Econ. Res. Serv., Oct. 1964. Data for 1957 were reported in Milk Distributors' Sales and Costs, MDSC No. 6, U.S. Dept. Agr., Econ. Res. Serv., July 1958. Data for 1976-78 are for 30 fluid milk processor-distributors and not published previously. Data are for Jan.-Mar. except Oct.-Dec. for 1957. Data for homogenized milk only except for 1976-78 when all fluid items were included.

4/ Federal milk order (FMO) data reported in Packaged Fluid Milk Sales in Federal Order Markets, by Size and Type of Container and Distribution Method, During November 1977. AMS-553, U.S. Dept. Agr., Agr. Mkg. Serv. (AMS), June 1979. Data are for fluid milk and cream items except for 1977 when cream was excluded.

Table 8--Percentage of fluid milk and cream sales by container sizes, 1954 and selected years through 1978 1/

Year	Bulk 2/			Gallon			Half-gallon			Quart			Other 3/		
	ESCS 4/	FMO- AMS 5/		ESCS 4/	FMO- AMS 5/		ESCS 4/	FMO- AMS 5/		ESCS 4/	FMO- AMS 5/		ESCS 4/	FMO- AMS 5/	
						Percent									
1954	2.6	--		0.9	--	29.2	55.5	--		11.8	--		11.8	--	
1956	3.8	--		2.3	--	37.4	42.8	--		13.7	--		13.7	--	
1958	5.0	--		3.2	--	46.4	33.8	--		11.6	--		11.6	--	
1960	5.1	--		7.7	--	50.8	25.8	--		10.6	--		10.6	--	
1962	6.1	--		8.0	--	56.1	17.4	--		12.4	--		12.4	--	
1963	--	4.8		--	12.6	--	--	54.9		--	15.8		--	11.9	
1964	4.7	5.4		12.6	15.8	54.2	14.8	53.0		--	13.2		13.7	12.7	
1965	--	5.7		--	16.1	--	--	52.7		--	12.7		--	12.8	
1966	--	6.0		--	17.5	--	--	52.2		--	11.4		--	12.9	
1967	--	6.0		--	18.5	--	--	52.3		--	10.0		--	13.3	
1969	--	5.7		--	22.1	--	--	46.6		--	12.9		--	12.6	
1971	--	4.4		--	28.6	--	--	43.1		--	10.6		--	13.2	
1973	--	4.1		--	36.7	--	--	37.8		--	8.5		--	12.8	
1975	--	3.5		--	42.1	--	--	33.6		--	7.2		--	13.6	
1976	3.6	--		40.5	--	31.5	6.7	--		17.7	--		17.7	--	
1977	4.0	3.0		43.2	48.8	29.1	6.2	29.4		17.5	5.8		17.5	12.9	
1978	3.3	--		43.4	--	30.3	6.4	--		16.6	--		16.6	--	

-- = Not estimated.

1/ Data from two different sources are presented: The ESCS columns contain plant sample data and the FMO-AMS columns contain Federal milk order plant data. The data show similar trends despite differences in: (1) fluid milk items included, (2) time of year, and (3) percent of industry product sales.

2/ Plastic bag-in-box and metal can.

3/ Includes these sizes: Pints, half-pints, 10 ounces, third-quarts, 4 ounces.

4/ Data for 1954-56 and 1958-64 were reported in Milk Distributors' Sales and Costs, MDSC No. 24, U.S. Dept. Agr., Econ. Res. Serv., Oct. 1964. Data for 1976-78 are for 30 fluid milk processor-distributors and not published previously. Data are for Jan.-Mar. except Oct.-Dec. for 1957. Data for homogenized milk only except for 1976-78 when all fluid items were included.

5/ Federal milk order (FMO) data reported in Packaged Fluid Milk Sales in Federal Order Markets, by Size and Type of Container and Distribution Method, During November 1977. AMS-553, U.S. Dept. Agr., Agr. Mkg. Serv. (AMS), June 1979. Data are for fluid milk and cream items except for 1977 when cream was excluded.

Table 9--Percentage of fluid milk and cream sales by type and container size, by regulated handlers in Federal milk order markets, November 1963-67, 1969, 1971, 1973, 1975, and 1977

Type of container by size	1963	1964	1965	1966	1967	1969	1971	1973	1975	1977
Glass:										
Gallon	7.8	9.7	7.9	6.3	5.3	3.0	1.5	1.0	0.3	0.1
Half-gallon	14.9	14.1	13.9	13.0	10.7	5.8	3.4	2.0	1.5	.8
Quart	7.2	5.4	5.3	4.4	3.4	2.8	1.6	.9	.6	.3
Pint	.1	.2	.1	.1	1/	1/	1/	1/	1/	1/
Half-pint	1.3	1.0	.8	.7	.4	.1	.1	1/	1/	1/
Other	.1	1/	1/	1/	1/	1/	1/	1/	1/	--
Total 2/	31.4	30.3	28.1	24.5	19.9	11.9	6.6	3.9	2.4	1.3
Paper:										
Gallon	4.8	5.9	7.2	9.7	10.8	14.6	18.1	17.3	16.8	12.5
Half-gallon	40.0	38.9	38.8	39.2	41.2	39.8	38.3	34.2	30.8	27.2
Quart	8.6	7.8	7.4	6.9	6.5	10.1	8.9	7.6	6.6	5.4
Pint	1.8	2.0	1.9	1.8	1.7	1.7	1.7	1.8	1.7	1.2
Half-pint	8.3	9.2	9.4	9.9	10.4	9.9	10.6	10.0	10.4	10.9
Other	.4	.4	.5	.5	.6	.8	.7	.7	.8	.4
Total 2/	63.8	64.2	65.2	67.9	71.3	76.8	78.4	71.6	67.2	57.7
Plastic:										
Gallon	--	.1	1.0	1.5	2.4	4.5	9.0	18.5	24.9	36.2
Half-gallon	--	1/	1/	.1	.3	1.0	1.4	1.6	1.3	1.4
Quart	--	1/	1/	1/	1/	1/	.1	1/	1/	1/
Pint	--	1/	1/	1/	1/	1/	1/	1/	.1	1/
Half-pint	--	1/	1/	1/	1/	.1	.1	.2	.3	1/
Other	--	1/	1/	1/	1/	1/	1/	.1	.3	.3
Total 2/		.1	1.0	1.6	2.8	5.6	10.7	20.5	26.9	38.0
Bulk: 3/										
5-10 quarts	--	1.1	1.4	1.4	1.4	1.3	.9	.6	.3	1/
Over 10 quarts	--	4.3	4.3	4.6	4.5	4.4	3.5	3.5	3.2	3.0
Total	4.8	5.4	5.7	6.0	6.0	5.7	4.4	4.1	3.5	3.0
Total 2/	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

-- = Not available. 1/ Less than 0.05 percent. 2/ May not total due to rounding. 3/ Includes metal cans and plastic bag-in-box containers.
Source: Packaged Fluid Milk Sales in Federal Order Markets, by Size and Type of Container and Distribution Method, During November 1977. AMS-553, U.S. Dept. Agr., Agr. Mkg. Serv. (AMS), June 1979. Data includes milk and cream sales except for 1977 when cream was excluded.

Table 10--Percentage of all fluid item sales by size and type of container for 30 fluid milk processor-distributors,
by quarter and annual, 1976-78

Type of container by type	1976				1977				1978				1976 quarters				1977 quarters				1978 quarters			
	1976	1977	1978		1976	1977	1978		1976	1977	1978		First	Second	Third	Fourth	First	Second	Third	Fourth	First	Second	Third	Fourth
Gallon:																								
Glass	0.1	2/	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0
Plastic	31.4	33.8	34.7	30.3	28.3	32.6	34.2	34.2	34.1	34.1	34.1	34.2	34.1	34.1	34.1	34.2	34.6	32.7	35.9	35.6	35.9	35.9	35.9	35.6
Paper	10.2	10.2	6.7	10.2	11.1	9.7	9.7	10.5	10.4	10.1	9.7	9.7	10.1	10.1	10.1	9.7	8.8	7.0	4.6	6.3	4.6	4.6	4.6	6.3
Total 1/	41.6	44.0	41.4	40.5	39.5	42.5	44.0	43.2	44.5	44.2	43.9	43.9	44.2	44.2	44.2	43.9	43.4	39.7	40.5	41.9	40.5	40.5	40.5	41.9
Half-gallon:																								
Glass	0	2/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Plastic	1.5	1.8	2.0	1.2	1.2	2.2	1.5	1.6	2.5	2.1	1.2	1.2	2.1	2.1	2.1	1.2	1.5	2.0	2.3	2.1	2.3	2.3	2.3	2.1
Paper	29.5	27.9	29.5	30.3	31.3	29.2	27.2	27.6	27.8	28.2	28.0	28.0	28.2	28.2	28.2	28.0	28.8	30.6	30.7	28.0	30.6	30.7	30.7	28.0
Total 1/	31.0	29.7	31.5	31.5	32.5	31.3	28.6	29.1	30.3	30.3	29.5	29.5	30.3	30.3	30.3	29.5	30.3	32.6	33.0	30.1	32.6	33.0	33.0	30.1
Quart:																								
Paper	6.8	6.4	6.6	6.7	6.7	7.0	6.7	6.2	5.9	6.5	6.8	6.8	6.5	6.5	6.5	6.8	6.4	6.9	6.9	6.3	6.9	6.9	6.9	6.3
Glass	0	2/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pint, paper	3.6	3.3	3.7	3.3	3.9	4.0	3.2	3.0	3.5	3.8	3.1	3.1	3.8	3.5	3.8	3.1	3.2	4.0	4.2	3.5	4.2	4.2	4.2	3.5
10-ounce, paper	.6	.6	.6	.5	.6	.6	.6	.6	.6	.7	.6	.6	.6	.6	.7	.6	.5	.6	.6	.6	.6	.6	.6	.6
Half-pint, paper	12.7	12.4	12.2	13.9	12.6	10.8	13.6	13.8	11.6	11.3	12.7	12.7	11.3	11.6	11.3	12.7	12.8	12.2	10.5	13.5	12.2	10.5	13.5	13.5
4-ounce, paper	0	2/	.1	0	0	0	0	2/	2/	2/	.1	.1	2/	2/	2/	.1	2/	.1	.1	.1	.1	.1	.1	.1
Dispenser	3.7	3.5	3.9	3.6	4.2	3.8	3.3	4.0	3.5	3.2	3.3	3.3	3.2	3.5	3.2	3.3	3.3	3.9	4.3	4.1	4.3	4.3	4.3	4.1
Total 1/	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ May not total due to rounding.

2/ Less than 0.05 percent.

Table 11--Percentage of all fluid item sales by type and size of container for 30 fluid milk processor-distributors,
by quarter and annual, 1976-78

Type and size of container	1976				1977				1978				1976 quarters				1977 quarters				1978 quarters			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<u>Percent</u>																								
Plastic container:																								
Gallon	31.4	33.8	34.7	30.3	28.3	32.6	34.2	32.6	34.1	34.1	34.1	34.1	34.1	34.1	34.1	34.1	34.1	34.1	34.1	34.1	34.1	34.1	34.1	34.1
Half-gallon	1.5	1.8	2.0	1.2	1.2	2.2	1.5	1.6	2.5	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Quart	0	0	0	0	0	0	0	0	2/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total 1/	32.9	35.6	36.7	31.5	29.5	34.8	35.7	34.2	36.6	36.2	36.2	36.2	36.2	36.2	36.2	36.2	36.2	36.2	36.2	36.2	36.2	36.2	36.2	36.2
Paper container:																								
Gallon	10.2	10.2	6.7	10.2	11.1	9.7	9.7	10.5	10.4	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
Half-gallon	29.5	27.9	29.5	30.3	31.3	29.2	27.2	27.6	27.8	28.2	28.2	28.2	28.2	28.2	28.2	28.2	28.2	28.2	28.2	28.2	28.2	28.2	28.2	28.2
Quart	6.8	6.4	6.6	6.7	6.7	7.0	6.7	6.2	5.9	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Pint	3.6	3.3	3.7	3.3	3.9	4.0	3.2	2.9	3.5	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
10-ounce	.6	.6	.6	.5	.6	.6	.6	.6	.6	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7
Half-pint	12.7	12.4	12.2	13.9	12.6	10.8	13.6	13.8	11.6	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3
4-ounce	0	2/	.1	0	0	0	0	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/
Total 1/	63.3	60.8	59.4	64.9	66.3	61.3	60.9	61.7	59.9	60.6	60.6	60.6	60.6	60.6	60.6	60.6	60.6	60.6	60.6	60.6	60.6	60.6	60.6	60.6
Glass container:																								
Gallon	.1	.1	0	0	.1	.1	.1	.1	.1	0	.3	0	0	0	0	0	0	0	0	0	0	0	0	0
Half-gallon	2/	2/	0	2/	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quart	2/	2/	0	2/	0	0	0	0	0	0	.1	0	0	0	0	0	0	0	0	0	0	0	0	0
Total 1/	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
Dispenser:																								
5 gallon and larger	3.5	3.4	3.7	3.5	4.0	3.7	3.1	3.9	3.5	3.1	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Less than 5 gallon:	.2	.1	.2	.1	.2	.2	.2	.2	.1	.1	.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
Total 1/	3.7	3.5	3.9	3.6	4.1	3.8	3.3	4.0	3.5	3.2	3.2	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Total 1/	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ May not total due to rounding.

2/ Less than 0.05 percent.

Appendix table 1--Fluid volume processed, net sales, costs, and margins for 30 fluid milk processed-distributors, by quarter and annual, 1977 and 1978

Account	1977 quarters				1978 quarters			
	First	Second	Third	Fourth	First	Second	Third	Fourth
Fluid volume processed:								
Milk and cream	20.20	20.24	20.32	21.67	21.62	19.57	20.17	20.05
Other 1/	.78	.95	1.06	.85	.92	1.08	1.13	.82
Total	20.98	21.19	21.38	22.51	22.53	20.65	21.30	20.87
Million pounds per plant								
Dollars per cwt volume processed								
Net sales receipts 2/	19.33	19.77	20.07	20.12	20.19	21.87	22.44	21.92
Raw materials and other product costs:								
Milk and cream	10.04	10.02	10.18	10.35	10.30	10.37	10.74	11.34
Finished products	1.84	1.97	2.02	1.93	2.02	2.35	2.39	2.19
Other 3/	.76	.92	.98	.96	.99	1.21	1.23	1.08
Total	12.64	12.91	13.18	13.24	13.31	13.93	14.37	14.61
Gross margin	6.69	6.86	6.89	6.88	6.89	7.94	8.07	7.31
Operating costs:								
Salaries, wages, and commissions 4/	2.86	2.95	3.02	3.06	3.07	3.39	3.41	3.14
Container	1.25	1.32	1.26	1.32	1.29	1.38	1.38	1.35
Operating supplies	.35	.35	.38	.36	.35	.39	.40	.38
Rent, depreciation, and repairs	.86	.91	.94	.92	.87	.88	.93	.86
Energy	.21	.22	.25	.25	.26	.26	.28	.26
Taxes	.08	.10	.10	.10	.11	.12	.11	.09
Insurance	.07	.07	.08	.07	.08	.08	.08	.07
Services	.20	.19	.19	.21	.20	.23	.24	.24
Advertising	.13	.16	.14	.15	.14	.15	.15	.14
General	.23	.18	.17	.21	.22	.23	.20	.18
Total	6.24	6.45	6.53	6.65	6.58	7.12	7.17	6.72
Net margin 5/	.45	.41	.36	.23	.31	.82	.90	.59
								.37
								.65

1/ Other includes nonfat dry milk, orangeade base, water, and other products. 2/ Gross sales receipts less discounts, allowances, and damaged product returns. 3/ Ingredients other than milk, cream, and skim milk used to make cottage cheese, ice cream, orangeade, and other products. 4/ Includes such costs as State and Federal unemployment. Federal old age, worker's compensation, and pensions. 5/ Net return to owners before income tax.

Appendix table 2--Cost per dollar of net sales for 30 fluid milk processor-distributors,
by quarters and annual, 1977 and 1978

Account	1977 quarters				1978 quarters				1977	1978
	First	Second	Third	Fourth	First	Second	Third	Fourth		
<u>Cents</u>										
Raw material and other product costs:										
Milk and cream	51.9	50.7	50.7	51.4	51.0	47.4	47.9	51.7	51.2	49.5
Finished products	9.5	10.0	10.1	9.6	10.0	10.7	10.7	10.0	9.8	10.3
Other ^{1/}	3.9	4.7	4.9	4.8	4.9	5.5	5.5	4.9	4.5	5.2
Total	65.4	65.3	65.7	65.8	65.9	63.7	64.0	66.7	65.5	65.1
Gross margin	34.6	34.7	34.3	34.2	34.1	36.3	36.0	33.3	34.5	34.9
Operating costs:										
Salaries, wages, and commissions ^{2/}	14.8	14.9	15.0	15.2	15.2	15.5	15.2	14.3	15.0	15.1
Containers	6.5	6.7	6.3	6.6	6.4	6.3	6.1	6.2	6.5	6.3
Operating supplies	1.8	1.8	1.9	1.8	1.7	1.8	1.8	1.7	1.8	1.8
Rent, depreciation, and repairs	4.4	4.6	4.7	4.6	4.3	4.0	4.1	3.9	4.5	4.1
Energy ^{3/}	1.1	1.1	1.2	1.2	1.3	1.2	1.2	1.2	1.2	1.2
Taxes	.4	.5	.5	.5	.5	.5	.5	.4	.5	.5
Insurance	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4
Services	1.0	1.0	.9	1.0	1.0	1.1	1.1	1.1	1.0	1.1
Advertising	.7	.8	.7	.7	.7	.7	.7	.6	.8	.7
General	1.2	.9	.8	1.0	1.1	1.1	.9	.8	1.0	1.0
Total	32.3	32.6	32.5	33.1	32.6	32.6	32.0	30.7	32.6	31.9
Net margins ^{4/}	2.3	2.1	1.8	1.1	1.5	3.7	4.0	2.7	1.9	3.0

^{1/} Ingredients other than milk, cream, and skim milk used to make cottage cheese, ice cream, orangeade, and other products.

^{2/} Includes such costs as State and Federal unemployment, Federal old age, worker's compensation, and pensions.

^{3/} Included in operating supplies and services prior to 1977.

^{4/} Net returns to owner before income tax.

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